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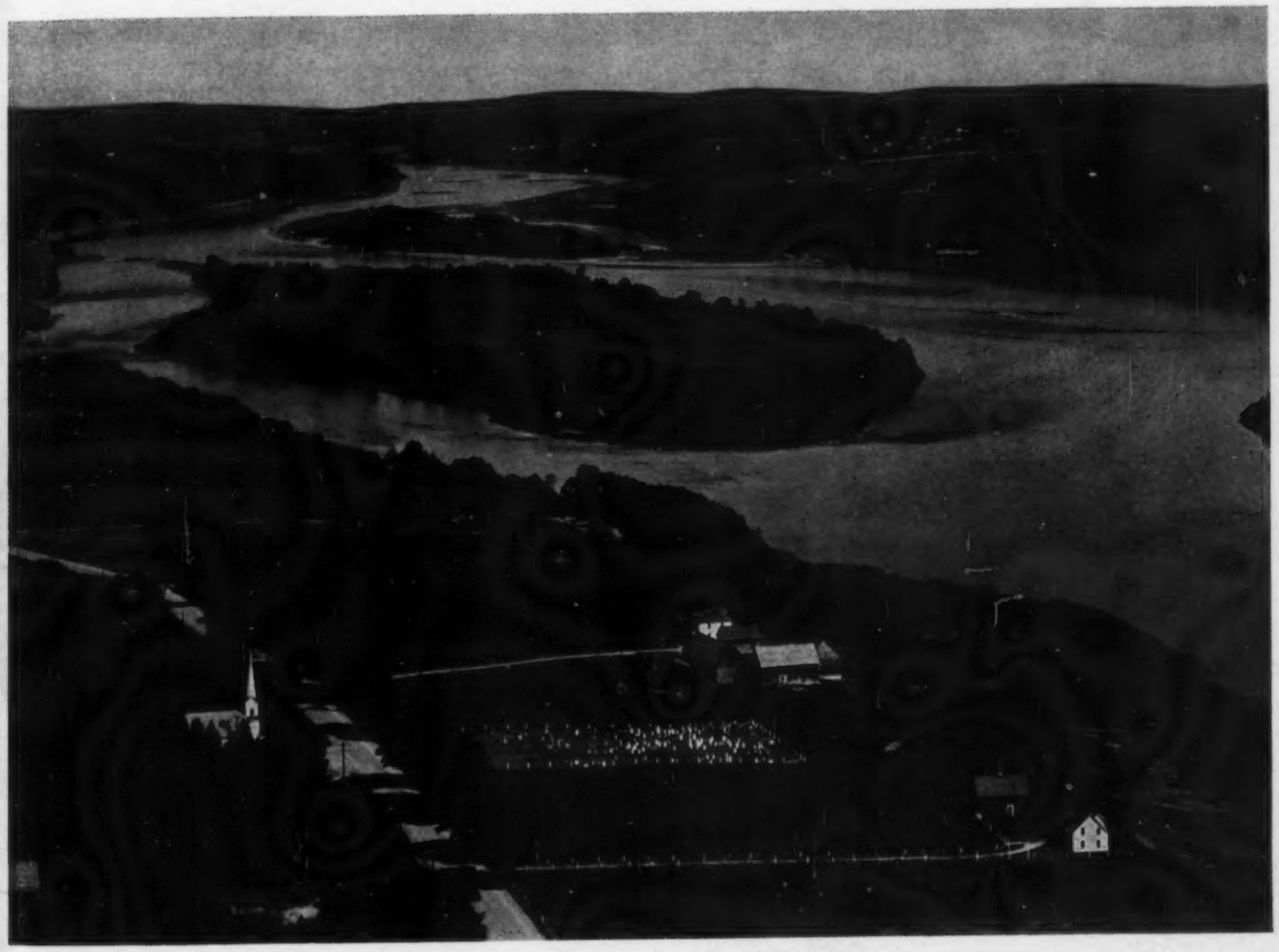

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As one of its major activities in carrying out its purpose, the Society publishes a monthly magazine, the Canadian Geographical Journal, which is devoted to every phase of geography — historical, physical and economic — of Canada, of the British Commonwealth and of the other parts of the world. It is the intention to publish articles in this magazine that will be popular in character, easily read, well illustrated, and informative.

The Canadian Geographical Journal will be sent to each member of the Society in good standing. Membership in the Society is open to any one interested in geographical matters. The annual fee for membership is five dollars (Canadian currency).

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Editor - WILLIAM J. MEGILL

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The articles in this Journal are indexed in the *International Index to Periodicals* and in the *Canadian Index*.

The British standard of spelling is adopted substantially as used by the Government of Canada and taught in most Canadian schools, the precise authority being the Concise Oxford Dictionary, fourth edition, 1951.

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His Excellency, Major-General Georges P. Vanier presents the Massey Medal to Commodore O. C. S. Robertson.
Dominion-Wide

THIRD* PRESENTATION OF THE SOCIETY'S MASSEY MEDAL

The Massey Medal of The Royal Canadian Geographical Society, awarded for "outstanding personal achievement in the exploration, development or description of the geography of Canada," was presented to Commodore Owen Struan Robertson, G.M.., R.D., C.D., of the Royal Canadian Navy by our Honorary Patron, His Excellency, Major-General Georges P. Vanier, at Government House on 20 February 1961. The President of the Society, Major-General H. A. Young, members of the Board of Directors of the Society, and Vice-Admiral H. S. Rayner, Chief of Naval Staff, attended the presentation.

The President introduced Commodore Robertson to His Excellency and read the following citation:

"Commodore O. C. S. Robertson, G.M., R.D., C.D., of the Royal Canadian Navy has been awarded the Massey Medal of The Royal Canadian Geographical Society for 1961 for his outstanding performance of duty and contributions to geographical knowledge of the Canadian Arctic while in command of H.M.C.S. *Labrador*.

"Owen Connor Struan Robertson was born in Victoria, British Columbia on the 16th of March, 1907. While serving as an officer in the Merchant Service, he joined the Royal Canadian Navy Volunteer Reserve in 1932. Called to active service in September 1939, he served in various appointments throughout the war and after, being appointed Commanding Officer designate of H.M.C.S. *Labrador* on 11 July 1952 while this ship was under construction in Sorel, Quebec, destined for service in the Arctic.

"To prepare himself for his new duties, Commodore Robertson attended international conferences on Northern Defence Problems, took part in studies of the Canadian Arctic with various Canadian government departments, and accompanied the United States Navy Northern Re-supply Missions in 1952 and 1953.

"In August 1954 H.M.C.S. *Labrador*, under his command, sailed from Halifax and completed the Northwest Passage. An impressive volume of geographical and oceanographical data was collected, which included 256 miles of soundings, 7,280 miles of reconnaissance surveys, sea temperature and salinity measurement, meteorological data and cosmic ray studies.

*The previous recipients were, in 1959, Superintendant H. A. Larsen of the R.C.M.P. for his outstanding work in command of *St. Roch*, and in 1960, Wing Commander K. A. Greenaway, C.D., of the R.C.A.F. for his contributions to the science of aerial navigation at high latitudes.

"In 1955 at the request of the United States Navy, Commodore Robertson in H.M.C.S. *Labrador* was assigned the task of supervising delivery of supplies for the DEW line stations to be constructed in the Foxe Basin Area. The stores were to be landed on eight different exposed beaches, the approaches to which were uncharted. *Labrador* entered Hudson Strait on June 15th and by July 29th all eight stations were surveyed, the approaches to the beaches cleared of ice and underwater obstacles, and navigational marks set up ashore. *Labrador*, accompanied by the U.S. Icebreaker *Edisto*, then led the fourteen ships through extremely heavy ice, averaging from six to eight feet thick, to the Foxe Basin. Cargo was discharged under conditions of fog, rain, high winds and ice, but by the end of September the operation was completed. *Labrador* remained there for a further two weeks on survey work, then conducted further survey work in Hudson Strait until early November and arrived in Halifax on the 17th. In addition to the DEW line operation itself, the amount of scientific work done during the period in the Arctic was by no means inconsiderable, and the hydrographic work provided a valuable addition to the cartographers' knowledge of these waters.

"Commodore Robertson's report "H.M.C.S. *Labrador* Report of Summer Operations 1955" is an excellent guide for ships proceeding to the Canadian Arctic.

Commodore Robertson has since participated in other Arctic operations with the United States Navy, notably a flight in the Blimp ZTG2 from the United States to the Ice Island T3 in August 1958, an operation under the polar pack in U.S. Submarine *Sargo* in January 1960, and the trip of the atomic submarine U.S.S. *Seadragon* through the Eastern Arctic to the North pole and back through Bering Strait to Honolulu in August-September 1960.

"Commodore Robertson has been commended for the excellence of his work by several United States Naval authorities, including the Secretary of the Navy and the Chief of Naval Operations. He was elected a Fellow of the Arctic Institute of North America in 1956 and was appointed a governor of the Institute in 1958. He is a member of the United States Navy's Officers' Research Panel and is a consultant on the United States Air Force Geophysics Panel."

His Excellency then presented the Massey Medal to Commodore Robertson and said:

"I should like to say how pleased I am to present the Massey Medal of the Royal Canadian Geographical Society. As an almost lifelong but now happily returned expatriate, I am eager to emulate the interest in geography of my predecessor who instituted this Medal.

"I would like to add my congratulations to those already bestowed upon its recipient, for his outstanding achievements in opening up the polar seas. I am happy to learn from the citation that his spectacular work was carried out in close collaboration with our neighbour and ally to the south. What Commodore Robertson has done reflects the highest credit not only on himself but also on the Royal Canadian Navy and upon Canada."

Afterwards, Commodore Robertson was congratulated by members of the Board of Directors of the Society.

General A. G. L. McNaughton congratulates Commodore Robertson after the presentation of the medal.
National Defence, Navy

"Japan in Bloom." A section of the new conservatories at the Montreal Botanical
for the 1960 autumn Chrysanthemum Exhibition.

ransformed

Montreal Botanical Gardens

Botanical Gardens in Canada

by LESLIE LAKING

OVER A century ago Sir William Hooker, an eminent British botanist, was appointed Director of what was to become the most noted institution of its kind in the world — the Royal Botanic Gardens, Kew, England. He sought to make "Kew Gardens" so attractive that people would develop an inherent interest in plants. Fully aware of the important part that a botanical garden must play in the scientific life of the country, he nevertheless made his beloved garden a famed visiting place. Over the years, old established botanical gardens in Britain, Europe, Asia, and to some extent in the United States, have become symbols of spiritual refreshment, where beauty joins with the excitement and romance of seeing living plants or representatives of vegetation from far away places.

Canada, having started so late in pursuits of this nature, has developed little tradition for botanical gardens. The name still rests uneasily on some lips. As recently as 1951 the author of the Report of the Royal Commission on Arts, Letters and Science, concluded that "Among Commonwealth countries, Canada has been particularly slow to awaken to the value of Botanical Gardens in its economy, and its cultural development." Twenty-five years ago in the October 1935 issue of the *Canadian Geographical Journal*, Dr. H. T. Gussow, then Dominion Botanist, spoke out, ". . . urging the immediate formation of Botanic Gardens as a necessary step in the full development of the natural resources of the country."

It is not surprising that the founders of botanical gardens which now are beginning to play their part in the cultural and scientific life of Canada, have had rugged paths to follow. In Canada, some of the tasks which in other countries would be accomplished at botanical gardens, have been undertaken by universities and both Federal and Provincial Experimental Stations. However, with the exception of the Central Experimental Farm, Ottawa, such agencies have been handicapped, having no vast living plant collections

The gates of Glendon Hall, formerly the entrance to Glendon Hall Laboratory and Garden, University of Toronto, now become the entrance to the newly-established York University.
Dept. of Botany, University of Toronto

at their disposal, such as those traditionally maintained at botanical gardens.

What then is a botanical garden ? A definition which has proved useful by this author, sets botanical gardens apart from parks in this manner:

> A Botanical Garden is a hybrid type of organization, combining some of the functions of a University, a Museum and an Experimental Station, with the informal recreational aspects of a park system. The tools of a Botanical Garden — its plant collections — are so employed that they exhibit great aesthetic appeal, along with instructional and inspirational values, as well as existing for their primary scientific purposes.

During the nineteen-twenties and early thirties, a surge of interest in botanical gardens arose in three distinct areas of Eastern Canada — at Montreal, Hamilton and Toronto. In Montreal, a noted Canadian Botanist, the late Frère Marie-Victorin, was successful in persuading the City of Montreal to set aside part of Maisonneuve Park for a botanical garden in 1931, which Curator Henry Teuscher has since developed and made famous.

At Hamilton, the idea of a botanical garden had its beginnings within the Board of Park Management of that city under the leadership of the late Hon. T. B. McQuesten. An independent botanical garden was planned which would be situated most advantageously for favourable climate and for concentration of population, and which could do for Canada what Kew Gardens was doing for Great Britain. This development has become The Royal Botanical Gardens, Hamilton.

As is the case with many European botanical gardens, Toronto's interest was centred at the University under the leadership of the late Professor R. B. Thomson, Professor of Botany. For nearly thirty years, and up to the time of his death in 1947, Professor Thomson sought to secure a series of contiguous properties in North Toronto for a botanical garden. Later the E. R. Wood estate on Bayview Avenue in Toronto, a beautiful garden comprising some 80 acres, was bequeathed to the University. In the early fifties it was made available to the Departments of Botany and Forestry for botanical garden purposes under the name "The Glendon Hall Laboratory and Garden". On exceedingly thin budgets, progress was made in research and in introducing botanical garden ideas to the already developed grounds.

However, during 1960, the announcement that York University would be located on this property has brought this young and promising institution to a halt.

Not far from Toronto, on a 100-acre property bordering the Credit River at the village of Meadowvale, is the site of the newest garden in Ontario — the Meadowvale Botanical Garden. Launched in 1958 as a non-profit educational organization, its founder H. B. Dunnington Grubb, plans for a horticultural type of botanical garden serving the public, particularly of the Metropolitan Toronto area. Some plantings have already been established, and an irrigation system installed, but the main development now awaits funds from public subscription.

In Vancouver on Canada's west coast, the landscaped portions of the 1,000-acre University campus comprises the University of British Columbia Botanical Garden. It is being developed jointly by the Departments of Botany and Horticulture. University expansion programmes have interfered with the project but progress is being made in a number of areas under the leadership of Dr. T. M. C. Taylor, Director, and Dr. J. W. Neill, Associate Director of the Gardens.

Though this Garden is primarily for teaching and research, the visiting public find such developments as the new 3-acre Japanese Garden (the Nitobe Memorial Garden), the Rose Test Garden, and the collections of native British Columbia trees and plants, interesting, attractive and instructive. Among plants especially notable are broad-leaved evergreens, and rhododendrons growing magnificently in an inherently suitable environment.

The Queen Elizabeth Arboretum developed by the Parks Board on a height of land in the geographic centre of the City of Vancou-

The Rock Garden at the Royal Botanical Gardens, Hamilton, a visitors' paradise, stands as an example of rehabilitated sand and gravel pits—a display garden with an educational flavour blooming through three seasons.

Royal Botanical Gardens, Hamilton

ver could have some significance as an arboretum in that its collections of native and exotic trees and shrubs provide considerable variety. However, the educational aspects of the collections have not been exploited. The material displayed is not labelled, hence this and the fine horticultural gardens associated with it are not functioning as an arboretum or botanical garden.

The famed gardens of the Niagara Parks Commission along the Niagara Peninsula of Ontario could be considered in the same category; however, here an attempt is made to make the hundreds of thousands of yearly visitors aware of what they are seeing. Important and strategically located tree specimens and some horticultural plant material is labelled in the Oakes Garden Theatre overlooking Niagara Falls, and at the School of Horticulture near Queenston. Though this development has not been considered a botanical garden, its importance in the horticultural world is considerable, for in addition to placing on public display a wide range of plant material in a majestic setting, the Niagara Parks Commission conducts a School of Horticulture.

The Morgan Arboretum, established in 1946 on a 700-acre tract of original great forest, is adjacent to the campus of Macdonald College at Ste-Anne-de-Bellevue in the Province of Quebec. This is essentially an arboretum of native species of woody plants set aside as a project in woodland conservation and management. Though it is primarily an outdoor laboratory for students, it is open to visitors at all times, and the public is invited to support the arboretum through membership. This project is proceeding under the curatorship of Dr. W. H. Brittain of the Macdonald College Staff.

One of the aspects of Canadian life which is now providing considerable stimulus for botanical gardens is the importance which horticultural and home gardening pursuits have attained. Great new demands have been placed on all existing information outlets; they are being overwhelmed by the demands of the public. Additional outlets must arise, and at what better places than botanical gardens! In addition, it has now become evident that the public is no longer satisfied just to see a pleasing display of plant material. Even a spectacular display does not satisfy if not combined with instructional features.

Visitors to a Canadian botanical garden are not likely to bring out the familiar old chestnut "Where is the banana tree?" — rather the question will be asked, "can I grow those magnificent tree peonies in Kingston?" or "where could I secure iris such as 'Cliffs of Dover', 'Blue Sapphire' and 'Princess Anne' or are they only grown in collections such as I have seen at the Spring Garden?" The instructive aspect introduced to Gardens has made our less magnificent (architecturally speaking) yet still beautiful botanical gardens both meaningful and much more satisfying.

Though botanical gardens owe their inception, not to aesthetic, but to practical, usually medicinal demands, the horticultural aspect of present day botanical gardens is bound to play an ever increasing part. Though it is but one of the functions of a botanical garden, it is the one which attracts the greatest public attention and through which great public service is possible.

The broader programmes of botanical gardens are in the field of research — the aspect which often escapes the direct interest of people using the gardens. Research in the broad botanical field is endless. It ranges from discovery, naming and classification of plants, to seeking further ways of extracting the secrets of antibiotics and drugs from plants yet unknown — from studies of new media in which to grow plants, to problems in phytopathology. It includes too, the creation of new plants for horticultural, agricultural or forestry purposes.

Botanical gardens are hence concerned with serving three basic purposes: research, education, and recreation.

In looking to Canada's three furthest developed botanical gardens, the aspects of special interest to the public will receive emphasis, and the author must be forgiven for the more detailed references made to the institution with which he is associated and hence most intimately acquainted.

Montreal Botanical Garden

The furthest advanced and most complete botanical garden in Canada is the Montreal Botanical Garden which is owned and main-

A garden in the Japanese tradition, the Nitobe Memorial Garden at the University of British Columbia's Botanical Garden, was recently dedicated.

J. W. Neill

A contrast in setting is shown by this view of the arboretum at the Montreal Botanical Garden.

Montreal Botanical Garden

An autumn exhibition of vegetables cultivated in the Economic Garden, Montreal Botanical Gardens. A variety of cucurbits are displayed amongst sheaves of oats.

Montreal Botanical Garden

tained by the City of Montreal as a division of its Parks Department. This is a contained garden in the tradition of European botanical gardens with walls and fences enclosing its 190 acres. Its gardens are renowned for their instructive elements. For example, a handsome formal garden of considerable proportions not only provides the visitor with an opportunity of studying garden plants of distinction, but also has a most interesting portion devoted to Economic Plants. Here vegetables, textile and condiment-yielding plants and grain crop plants are to be found not only in present day varieties, but in many instances, possible ancestors of these cultivated varieties are on exhibition. Information presented in both French and English makes this truly a living museum.

The Fruit Garden, and Garden of Medicinal Plants are of interest to visitors, and the horticulturally-minded will find pleasure and information in the shrub collections, the display of Rock Garden plants and the Aquatic Garden.

The Montreal Botanical Garden maintains a large and exceedingly interesting trial of Annual Flowers where unintroduced and recently-introduced varieties of summer flowers not only create a great display but are there for comparison and record purposes. A Lawn and Turf Garden demonstrates the appearances of lawn grasses and how they behave as individual species and in mixtures. The Hedge Garden provides another demonstration particularly useful to visitors from the more rigorous climate of Montreal and the east. The young arboretum is approximately one third planted and the new alpine garden is now ready for planting.

Direct educational work has many facets at the Montreal Botanical Garden. The visitor finds the Children's Garden catering to some 200 young gardeners a fascinating place, and should the visit be made on a

The central section of the conservatories at the Montreal Botanical Garden, during the 1959 Chrysanthemum Show.

Montreal Botanical Garden

Tuesday or a Thursday, the main gardening days in summer, there will be ample demonstration of a botanical garden at work. This Garden's Information Service has grown into a department of its own, so great is the public demand.

The greatest thrill for visitors to the Montreal Botanical Garden is its magnificent new conservatory development. The first sections were opened in 1956 and most of the remainder were brought into use during 1959. The older ranges of growing houses are now producing quantities of flowering plants for special seasonal displays of chrysanthemums, spring bulbs and other flowering plants in the new conservatories. Other sections of the new conservatories transport the visitor in turn from the wonders of tropical vegetation, where orchids and other epiphytes grow on realistic-looking trees with an ingenious skeleton of steel and cork, to the aridity of the desert with its characteristic cacti and other succulents. Each season brings its own special interest, hence visitors to Montreal in non-gardening months need no longer avoid the Montreal Botanical Garden.

The research programme of this Garden is linked with that of the University of Montreal which has its School of Botany conveniently housed in the upper floor of the Botanical Garden Headquarters.

The Royal Botanical Gardens, Hamilton

In contrast, the Royal Botanical Gardens, located at the extreme western tip of Lake Ontario, and boasting one of the most satisfactory climates in eastern Canada for the outdoor culture of plants, has been concentrating on outdoor developments. Comprising some 1,900 acres, this cannot be a walled garden in the traditional sense. In view of the fact that Cootes Paradise, a 600-acre tract of open water and marshland, together with several hundred acres of beautifully wooded

One of the sections at the Royal Botanical Gardens' new arboretum will be devoted to Fragrant Shrubs, and will include this beautiful new snowball, Viburnum carlcephalum.
Royal Botanical Gardens, Hamilton

Bottle-brush buckeye, Aesculus parviflora, *is one of the spectacular specimens flowering in late July in the Rock Garden, Royal Botanical Gardens.*
Royal Botanical Gardens, Hamilton

ravinelands on its shorelines, are part and parcel of the Royal Botanical Gardens, it is inevitable that the natural heritage has received considerable attention.

With major highways traversing the property, what might be considered a distressing situation has been capitalized on; for what is a botanical garden without visitors ? In order to capture the interest of the public, assembling plant collections and developing major horticultural gardens has been given priority.

The Rock Garden, created in 1929-30 from gravel and sand pits along the entrance to the City of Hamilton has become a well-loved display garden. It has three main seasons of interest: spring bulbs for May, summer flowers from July to September, followed by chrysanthemums in October. This garden is responsible for introducing many plants of horticultural importance to visitors, ranging from special new varieties of the above, to exotic specimens, such as bottlebrush buckeye, a shrubby chestnut from the flora of Texas with elegant creamy-white flower candles in July, or the new fragrant snowball, *Viburnum carlcephalum*, which delights visitors during late May. Specimens of bald

cypress are a surprise to many who believe their range to be limited to the swamps of Florida.

Located on a peninsula overlooking an arm of Hamilton Harbour, the Spring Garden stretches out in full view of visitors approaching Hamilton from the east through Burlington. Begun in 1947 on a very small budget, it has since developed an international reputation for its collection of tall bearded iris.

The spring atmosphere has been accentuated further with the recent introduction of a Tulip Variety Garden. The Peony Collection comes into bloom before the iris fade, and a large collection of *Hemerocallis* or daylilies serving as a trial garden, flowers intermittently from June to September with the greatest concentration of bloom in July and early August.

The Children's Garden, in operation since 1947, constitutes an important part of the direct educational work of the Royal Botanical Gardens. This programme makes use of garden plots to instruct children of the nine to twelve years age group in gardening techniques, and provides contact with the natural environment. Senior classes operate several projects including a flower garden, a soft fruit plot, a demonstration kitchen garden, and a garden of unusual vegetables. A six-week Saturday morning nature study course in early spring rounds out the programme.

The Children's Garden has become a visitors' haven, for the whole programme is proving of great interest to those who watch as well as for those who work there. In another part of this same area, visitors may study the trials of annual flowers as well as see the results of plant breeding projects dealing with michaelmas daisies, daylilies and iris.

The public has been introduced to many portions of the Gardens through the medium of nature trails. Sixteen miles of improved, well-marked trails traverse wooded ravines, marsh shores and meadowlands in Coote's Paradise, Hendrie Valley, Cold Spring Valley and Rock Chapel. Families as a whole are being reached through nature interpretation hikes skillfully led by the Garden's Conservationist.

The Sunken Garden, a formal garden located at the entrance to McMaster University, symbolizes the link between the two institutions whose lands exist side by side. The fact that the University President, Dr. G. P. Gilmour, has served as Chairman of the Board of the Royal Botanical Gardens for more than a decade, and that the President of the Garden's Board, His Honour Judge W. F. Schwenger, serves on the University Board is indicative of a valuable bond existing between the Gardens and the University. The Garden's natural environment has become a much-envied outdoors laboratory for students in biology.

The Tulip Variety Garden occupies the broad arc terrace of the Spring Garden at the Royal Botanical Gardens. The famous iris collection shares the lower terrace with peonies and Hemerocallis.

Royal Botanical Gardens, Hamilton

The most important development of the future, the Arboretum, has already been launched. Located on a 350-acre site about one third of which is wooded, this arboretum will emphasize the aspects of woody plants of most use to the majority of its visitors. Though systematic aspects common to traditional arboreta will not be lost sight of completely, special features such as a garden of climbing plants, a hedge garden, a lilac dell and a ground cover demonstration will be prominent. To give the public a colourful spectacle with instructional qualities, collections of Japanese cherries, flowering dogwoods, redbuds, and flowering crabs already introduced will be expanded.

Street trees and boulevard trees as well as smaller flowering trees suitable for residential planting will be on display. Coniferous collections and shrub collections are being introduced in groupings with an accent on use. Of special interest to foresters and students alike, native species of trees and shrubs will be represented as an extension of existing woodland.

Unlike the Montreal Botanical Garden which is emphasizing conservatory developments so magnificently, the Royal Botanical Gardens is committed to concentrate on the culture of hardy plants. It is felt that this is its chief obligation in view of the nature of its properties and its climatic amenities. This organization is supported by the City of Hamilton through its Parks Board as far as maintenance of the Gardens is concerned. The Ontario Provincial Government through grants to McMaster University specifically for the use of the Royal Botanical Gardens, has encouraged its development programme as well as scientific and educational work. Further support is derived from the Members' Association of the Royal Botanical Gardens, an increasing body of supporters which provides funds and in turn participates in the Garden's educational programme.

The Dominion Arboretum and Botanic Garden, Ottawa

With the first planting of trees dating back to 1889, the oldest Arboretum, and the one to which visitors must go if they wish to see a wide range of well established trees, is Canada's Dominion Arboretum and Botanic Garden located at the Central Experimental Farm in Ottawa. The present Arboretum covers about sixty-five acres of rolling land, well diversified in soil types and moisture. It lies between the Prince of Wales Highway (Ontario Highway No. 16) and the Rideau Canal. Being in 45° latitude, it is the farthest north arboretum on the continent, and is especially useful in testing for hardiness of plant materials. For example, thousands of Siberian pea trees (*Caragana*) grown as windbreaks in Western Canada have had their origin in seeds from trees grown at Ottawa.

The Botanic Gardens, which were formerly developed by the Horticultural Division of the Central Experimental Farm, have with the recent reorganization of the Department

James Redman, Supervisor, and the author (right) decide that the results of the Michaelmus daisy breeding programme have reached a stage when a selected few can be introduced into commerce.
Royal Botanical Gardens, Hamilton

Two opposing teams of chrysanthemums battle for football honours at the Dominion Arboretum's Chrysanthemum Show in 1960.

Canada Dept. of Agriculture

of Agriculture been combined with the Arboretum. The test gardens and ornamental grounds now occupy fifty acres. Valuable information on cultural methods, new varieties, and hardiness are made available to the public through bulletins, press releases, public lectures, and conducted tours. Thousands of visitors see the Arboretum and Botanic Gardens each summer in groups as members of Horticultural Societies, Women's Institutes, and farmers' tours. In winter, the gentle slopes of the Arboretum are fenced off to permit children to ski and toboggan, and in the summer concerts of recorded music are broadcast on Sunday afternoons.

The living plant collection at Ottawa consists of about 4,000 species, varieties, and cultivars* of woody plants and perennials. Most of the 35,000 square feet of greenhouse space is devoted to research, but a small proportion is retained for tropical plant collections and display purposes. The Annual Chrysanthemum Show (150 varieties, 3,000 plants) draws over 10,000 visitors each year.

The collection of dried and mounted plants (the Phanerogamic Herbarium) consists chiefly of native and introduced plants, but it is being rapidly expanded by the inclusion of cultivated plants. With its 400,000 specimens, increasing at the rate of 20,000 a year, it is used by all Canadian institutions to check identifications, and it has also gained world-wide recognition. The National Mycological Herbarium contains 100,000 specimens of parasitic fungi, wood destroying fungi, mushrooms, and plant diseases.

This organization maintains a plant and seed exchange service which is international

*Cultivars: cultivated varieties. It is now an accepted technical term.

in scope. Seed requests were received in 1960 from all over Canada and from thirty-nine countries; 7,759 packets were sent out and 2,737 were received.

The turf programme has some 3,000 test plots of forty-five varieties, thirty-five species and many combinations of these. Of special interest to the general public are the fifty demonstration plots which include good and not so good commercial turf mixtures sold through various retail outlets. The large display of hedges grown from a wide variety of trees and shrubs attracts much attention.

While the rigorous Ottawa climate precludes the possibility of growing some of the tender varieties of trees and plants that can be grown elsewhere in Canada, and therefore prevents the maintenance of a completely representative collection of Canadian growing plants, the wide variety of service given to the Canadian public makes the Dominion Arboretum and Botanic Gardens a truly national organization.

* * * *

Though botanical gardens have not been a traditional part of the scientific and cultural life of the Canadian nation, those who are concerned with these matters are heartened by the fact that the number of institutions is increasing and that those which have existed sufficiently long are now making a contribution to Canadian science and culture. It is then with considerable satisfaction that the birth of the newest botanical garden is here recorded, the Botanic Garden and Field Laboratory associated with the Department of Botany, University of Alberta.

The generosity of a distinguished alumnus of the University of Alberta, Colonel H. A. Dyde, O.B.E., in providing the eighty-acre site, points the way for others elsewhere who are in a position to do likewise. This property is located near the town of Devon, ten miles southwest of Edmonton. The Director, Dr. J. H. Whyte of the Department of Botany, University of Alberta, indicates that if given the required financial stimulus, this botanical garden will serve as a field laboratory for university students, a research centre, and at the same time will serve to introduce to the public a wide selection of plants which will thrive in the Edmonton environment.

In a brochure prepared for the Botanic Garden's launching in June 1960, the following quotation points to a fact which requires much broader acceptance: ". . . that Edmonton would, one day, mature to the point of recognizing that a Botanical Garden is as much a part of a city's cultural equipment as are orchestras, museums, art galleries, schools and universities".

A section of the Botanic Garden and Field Laboratory at the University of Alberta. Variety of terrain and habitat is a feature of the eighty-acre property recently provided for this botanical garden.

Right:—A winter scene in the Dominion Arboretum's Pinetum.
Canada Dept. of Agriculture

This sixty-year old specimen of the Camperdown elm (a cultivar of Ulmus glabra*) stands near the entrance to the Test Garden at the Dominion Arboretum and Botanic Garden, Ottawa.*

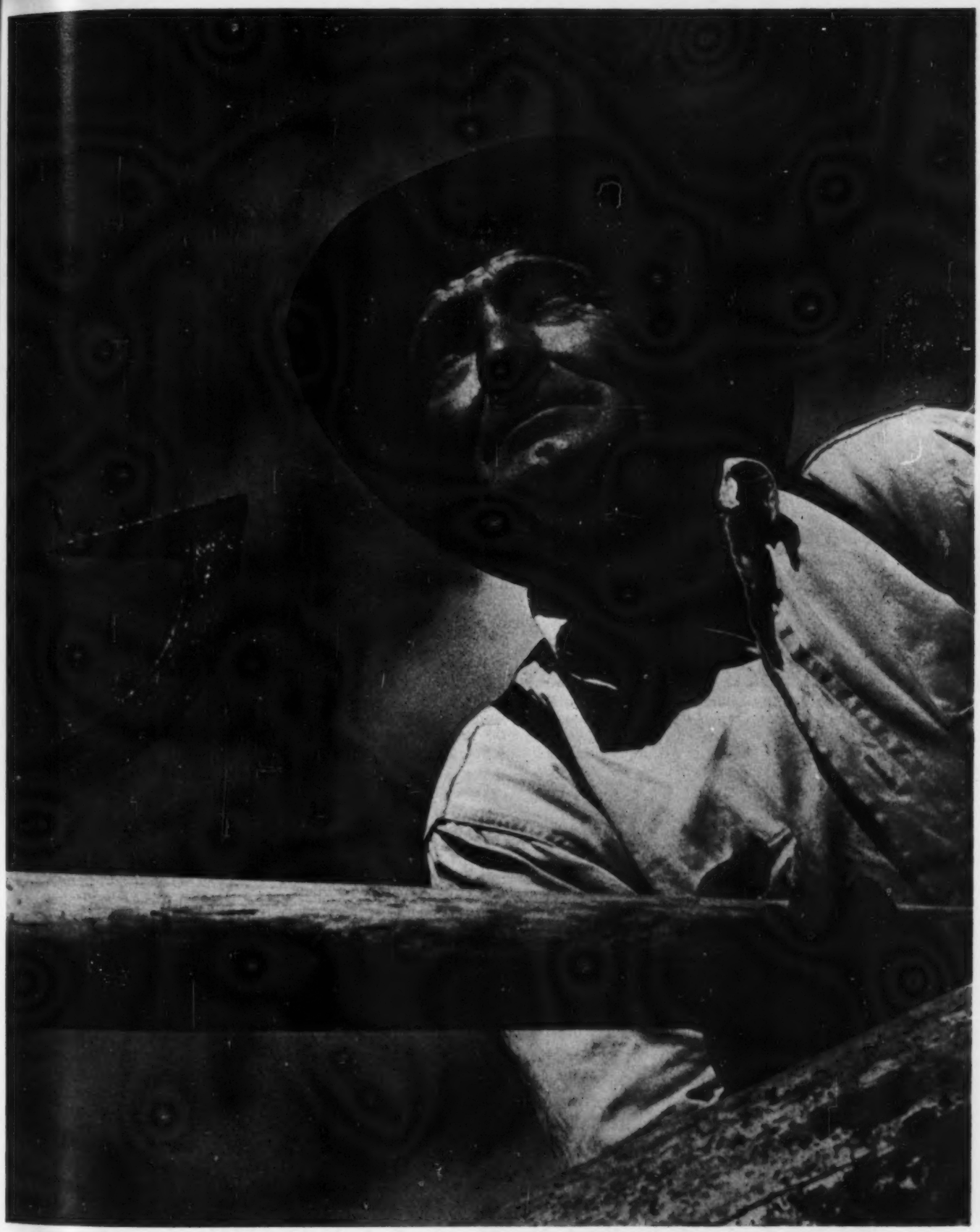
Canada Dept. of Agriculture

Spring Log Drive

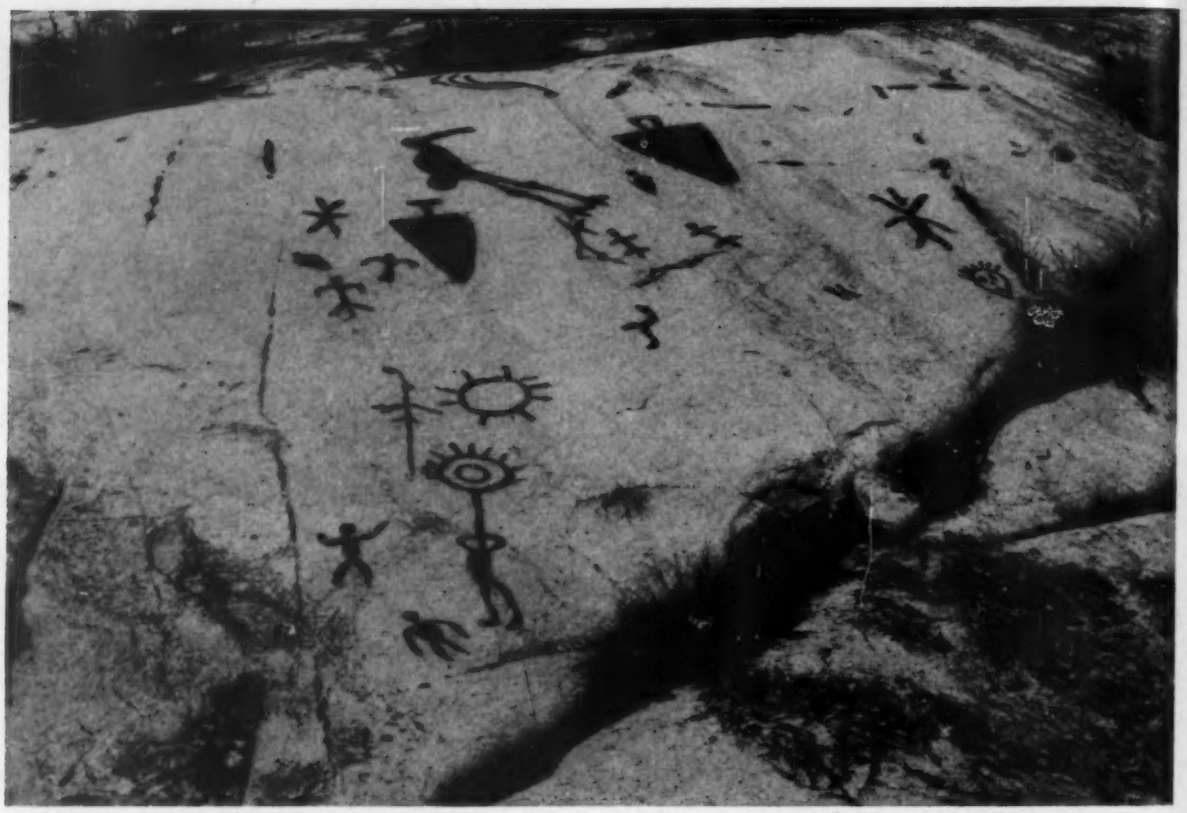
Photographs by Malak

During the winter, logs are cut and then piled on the ice of a frozen lake or river to await the spring break-up. Above—in May after the ice has melted, the "draveurs" get the logs underway for the long journey downstream to the pulp mills. The setting is the upper reaches of the Gatineau River in Quebec.

Left—a "draveur" keeps the logs moving after they have gone through the chute in the dam at the head of the lake. It may take as much as two years for logs from some areas to reach the pulp mill.



The drive foreman, chosen for his initiative and experience, keeps a watchful eye on the log drive. He is a key figure in the drive, for on him depends the free flow of logs downstream to the mill where they will be converted into many of our household needs.



One section of the rock carvings, darkened by charcoal, has a number of figures which are difficult to interpret. One of these is the "sun-deity" figure in the foreground. Two triangular figures near the heron-like bird appear in many places on the rocks in a much smaller size. The figure above the head or skull at the far right is also unidentified.

The Peterborough Petroglyphs

by GORDON and ENID MALLORY

Photographs by Gordon Mallory.

IN MAY of 1954, a miner, a geologist and a general manager of the American Nepheline Mining Company stopped to rest along a ridge of crystalline limestone rock in the bush country north of Stoney Lake, Ontario. The miner, Everett Davis, had passed the rock at least fifteen times, staked six claims nearby and had seen nothing unusual. Suddenly, the three men noticed some figures ground into the rock.

"One of the most significant contributions to our understanding of early native art in North America," was the feeling expressed by a professor and archaeologist, J. Norman Emerson, when he heard of the find.

The Peterborough carvings are located in the Blue Mountain area around Stoney Lake, thirty-five miles northeast of Peterborough. Their exact location is deep in bush country north of Stoney Lake in an area that was at first described as inaccessible and must still, six years later, be reached by foot.

We made our own trek to the petroglyphs on a warm afternoon in late October. It was a unique experience to stand face to face with aboriginal art in its isolated hiding-place. It was impossible not to be impressed that, perhaps 3,500 years ago, Indians had expressed their ideas on these rocks.

The carvings appear over an area one hundred and thirty-five feet by one hundred and two feet. The figures have been ground, rather then carved, into a slanting face of white crystalline limestone. Carving implies

a chipping action, thus breaking away particles of stone. Grinding is a rubbing, wearing-down action. A piece of hard rock has been used to 'grind' into the relatively soft limestone the figure of a heron or a man or the track of an animal. The shapes are not merely outlined but are ground into the rock in their entirety to a depth of ¼ inch or more.

In all there are ninety-two figures including animals, human forms and triangular, stemmed symbols of questionable identity. Much of the controversy in establishing the age of the carvings has centered around the triangular figures which can be interpreted to suit either of two conflicting hypotheses, which will be outlined later.

There are two areas of concentration which may have been worked at different times, and an appreciable difference in the depth of carvings in the two areas invites speculation.

The largest grouping is dominated by an impressive bird which appears to be a blue heron. It measures 57½ inches from head to feet and 36 inches from beak to tail. Also in this area is a 59-inch 'sun-deity' figure. Archaeologists hesitate to accept this carving as a sun-god as they have no direct evidence for such an interpretation and no previous knowledge of sun-worshippers in northeastern North America. It would be easy, however, to read an element of worship into the large, imposing figure which two small human forms seem to approach in attitudes of supplication. Above the large glyph is an outlined disk with projecting rays which seems to be a sun.

In the second area a predominant female figure, almost life-sized, has been interpreted as a fertility figure. A deer, a canoe-like glyph, and what appear to be snakes elaborately interwoven have been carved nearby.

Numerous other figures worked into the rock include salamanders, lizards, turtles, antlers and animal tracks. There may be totemic significance in the repeated appearance of the smaller animals. Some early North American Indians, of course, believed themselves to be descended from a particular animal or totem and regarded that animal as being taboo to them. It is possible that the glyph-carvers sought blessing and favour from their totem.

There is something particularly realistic and evocative in the large tracks which look as if a heavy animal had somehow left its imprint in the limestone rock. The largest tracks have been recorded as moose tracks but to us looked more like bear. Several small glyphs which cannot be identified may have been left incomplete by the carvers or may have been partially eroded.

The petroglyph discovery soon had local historians and naturalists calling for a proper investigation of the site.

So it was that two archaeologists from the University of Toronto took "the roughest ride on four wheels we have ever had." In a 1929 model truck they worked their way over an old logging trail through dense bush, over rock ledges, through a river and around swamps. Professor Emerson and Robert Popham, research associate, thought it the understatement of the year to say the place was isolated. At the end of this 'roughest ride', the archaeologists completed another mile and a half on foot to reach the glyphs.

A life-size female figure carved around erosion seams in the rock. To the left, a part of a figure resembling interwoven snakes can be seen.

A close-up of the "sun-deity" figure before it was darkened with charcoal. Note the texture of crystalline limestone in the foreground.

In the summer of 1954, a complete investigation was carried out under the direction of Paul W. Sweetman, Toronto teacher and archaeologist. The expedition, recommended by the Archaeological and Historic Sites Board of Ontario and sponsored by the Ontario Department of Education, comprised two field parties. The first was responsible for the surveying and mapping of the glyphs and would conduct a search for possible related artifacts or evidence of a village site. The second group would photograph and take

Darkening the figures with charcoal to make them more clearly visible in photographs.

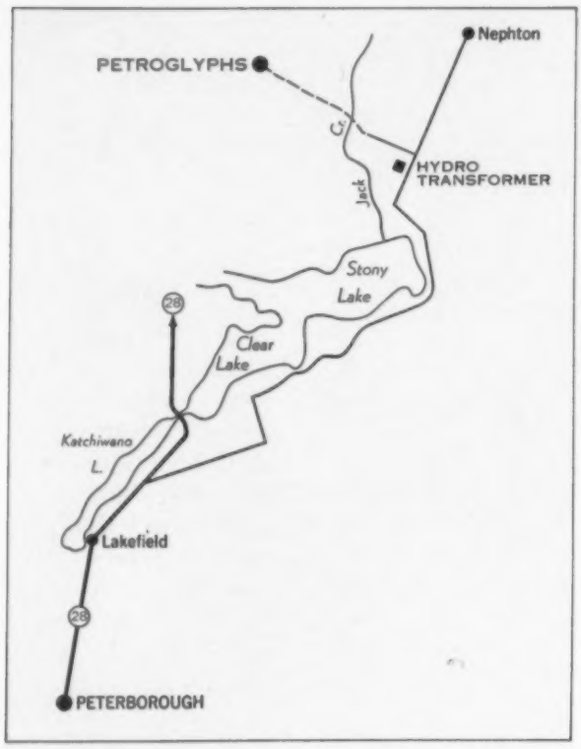
These large animal tracks are thought by some to be moose.

plaster casts of the figures for a permanent replica in the Royal Ontario Museum.

To provide themselves with drinking water while camping at the site, the men dug springs at the base of a rock ledge and finally dynamited a reservoir. Eric Davis, whose father discovered the glyphs, acted as camp cook and general errand boy for the men. The Nepheline Mines offered camping equipment and assisted with transportation and communication.

To photograph the glyphs the men dark-

A close-up of the heron and triangular figure. The smaller figures shown are unidentified.



ened the figures with charcoal after they had been carefully defined. Although many of the figures were clearly visible others were difficult to decipher. It took time, patience and careful deliberation to distinguish shapes that often had to be felt out with the hands or studied in just the right light. In his preliminary report, Mr. Sweetman describes the condition of the men as 'glyph-happy' when prolonged concentration sometimes made them uncertain of their own perceptions.

Two hypotheses have been advanced to explain the Peterborough carvings. One group of archaeologists suggests an antiquity of some 3,500 years. This belief is based on an interpretation of the triangular stemmed figures as the spearheads of the Laurentian culture.

Laurentian Indians lived before the time of pottery or agriculture and before the bow and arrow. Their existence was established only fifteen years ago and archaeologists are still unraveling their prehistory.

Finds of possible Laurentian artifacts four miles to the south are the closest evidence to support this theory. A ground slate point and a stone gouge were reported on the farm of Mr. Fred Hull. Worked flint chips were taken from the mouth of Jack's Creek. However, it is suggested that theme and motive in the carvings can be readily identified in terms of a Laurentian culture.

The small, easily subdued animal figures suggest the work of primitive subsistence-level people. Large, fierce animals are not depicted except by their tracks. The fertility theme would also be expected in subsistence-level people where survival of the race is always precarious.

The second hypothesis suggests a relatively recent date of 300-400 years ago. On this assumption, a resemblance is seen to paintings on Ojibway baskets and birch bark scrolls. Also, rock paintings near Lakes Massanog, Matagamasi, Nipigon and Temagami, believed to be Ojibway, exhibit certain similarities to the carvings.

If the carvings were done by Ojibways, the triangular symbols would be interpreted as coniferous trees. One question puzzled us as we studied the glyphs in the light of this hypothesis. Why would the carvers place their trees upside down while all other figures stand erect on the slanting rock ?

Anthropologists know that Ojibway teenage boys were sent alone into remote uninhabited areas to endure hardships and seek visions as part of their initiation to manhood. It has been suggested that Indian boys being conditioned in this way, carved the petroglyphs, unconsciously leaving an art form to be treasured centuries later. The inhospitable area in which the petroglyphs are found argues for this hypothesis. It has also been suggested that ancient medicine men might have sought religious power through the painstaking carving of such symbols in the rock.

It is difficult to establish the age of the glyphs by erosion rates since crystalline limestone cannot be accurately assessed. Those who adhere to the theory of great age argue that erosion or weathering on the relatively flat surface would take place evenly over the entire surface, not changing the shapes of the glyphs. Others argue that erosion would occur in the soft rock and that the carvings, which show few signs of erosion, must be of recent date.

In an effort to find archaeological evidence

that might date the carvers and the carvings, several excavations were made in the surrounding area. Results were largely negative as far as the glyph carvers were concerned but another find was made.

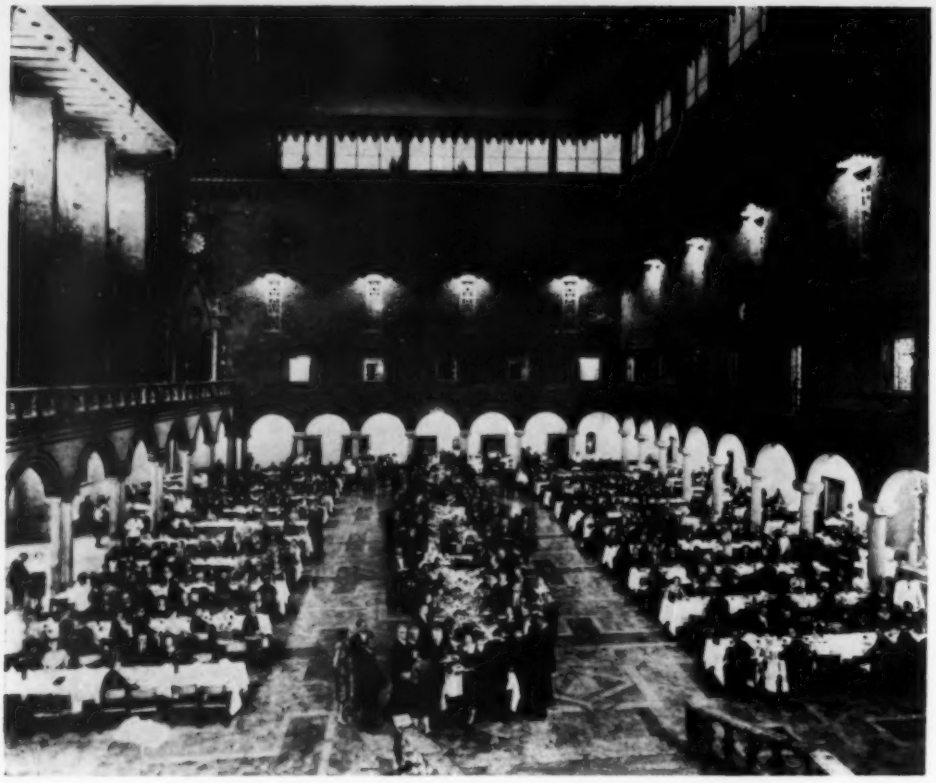
The Quackenbush site, as it is now called, extends over eight to ten acres of the farm of Lyle Quackenbush and has been identified as the site of a prehistoric Iroquoian village. It is situated some five miles south-east of the rock carvings. Lyle Quackenbush has been turning up Indian artifacts with his plough for years. Excavation unearthed an abundance of pottery fragments, bone refuse, charred corn and beans and two stone adzes. The corn and beans point to an agricultural people while the absence of European goods dates the site as prehistoric.

In comparison with other petroglyph finds in Ontario or in Canada, these carvings near Peterborough are outstanding. Algonquin Park has a single carved boulder located near Rock Lake. There are Ojibway pictographs near Lake Nipigon and near the Ontario-Manitoba border. The Nanaimo Petroglyph on Vancouver Island consists of perhaps a dozen figures outlined rather than cut down into the rock. No other work as extensive as the Peterborough glyphs is known to exist in Canada.

In spite of the hypothesis advanced and the search for concrete evidence, the questions posed by the glyphs have not yet been answered. Their interpretation, their age and the identity of their makers remain a mystery, part of the fascination that the past holds out to historian, archaeologist, anthropologist, romantic and naturalist alike.

It is perhaps fortunate that this treasure has been secluded and protected by rock and swamp and dense forest, hidden for centuries in a place where only the vitally interested and the honestly reverent will care to tread now that it has been found.

The track through the bush by which the petroglyphs are reached.



The scene at the closing banquet in Stockholm's Town Hall.

The Nineteenth International Geographical Congress

by N. L. NICHOLSON

THE NINETEENTH International Geographical Congress was held in Stockholm, Sweden, from August 6 to August 13, 1960, under the auspices of the five "Norden" countries — Iceland, Norway, Sweden, Denmark and Finland. This was the first time that an International Geographical Congress had been held so far north (Stockholm is 59½°N.) and it was also the first time that more than one country had acted as host to such a Congress. The opening ceremonies were under the chairmanship of Professor Hans Ahlmann, President of the International Geographical Union, and the official address of welcome was given by Governor Rickard Sandler, President of the Swedish National Committee of Geography. Most of the meetings were held in the Folkets Hus, a fine new building, barely completed, which had facilities for holding large and small meetings simultaneously, a restaurant and a temporary post office.

The Technical Sessions were organized into nine sections — polar and sub-polar geography; geographical cartography and photogeography; climatology, hydrography, oceanography and glaciology; geomorphology; biogeography; human geography; economic geography; methodology and bibliography and applied geography. Papers under certain of these topics were presented by fifteen Canadians.

An important feature of the Congress was the exhibition of geographical materials. There were five of these. An exhibit of cadastral plans and oid maps, illustrating the development of the Swedish cultural landscape from 1630 to 1690, was arranged by the Swedish Land Survey Board, and an International Exhibition of Population Maps was

arranged in the Stockholm School of Economics. The remaining exhibitions were in the Nora Latin School conveniently located across the road from the Folkets Hus. They were the International Exhibit of Thematic Maps; the International Exhibit of National Atlases, and an exhibition of modern Swedish maps. Geographical periodicals and publications from the five Norden countries were also on display. Canada's principal contribution was to the National Atlas exhibit. It included both the English and French editions of the *Atlas of Canada*, as well as the *British Columbia Atlas of Resources*, the *Economic Atlas of Manitoba*, the *Ontario Resources Atlas*, and several preliminary sheets of an Atlas of Quebec.

A number of symposia and excursions were held before and after the Congress, which gave the congressionists the opportunity to visit almost any part of Norden in which they were interested, and to discuss problems. The symposia took the form of meetings with lectures and discussions on special subjects, together with local excursions. For example, the main purpose of the "Abisko Symposium" was to discuss problems concerning high mountain morphology and to illustrate the discussion by excursions in typical areas of the Scandinavian Mountains. The excursions proper were intended to demonstrate areas and phenomena typical of, and important to the countries of Norden. An example of this was the six-day trip through Finnish Lappland which demonstrated the physical and human geography of the area, with emphasis on agriculture at the limit of permanent settlement.

During the Congress, shorter trips to see parts of Stockholm and its environs were arranged, such as a whole day excursion to Uppsala, the ancient capital of Sweden, the visit to Drottningholm Royal Castle, or to the open-air folk museum at Skansen. Such trips as these, together with the several social gatherings to which the Canadian geographers were invited, gave invaluable opportunities to get to know our Swedish colleagues more intimately, as well as to taste and see Swedish life. Perhaps the culmination of such affairs came on the last evening of the Congress when a great banquet was held at the magnificent Stadhuset or Town Hall of Stockholm. For Canadians, this Congress and its associated activities were particularly useful because of the opportunities which were available to see how man has adapted to environments similar to our own, particularly as the combined population of Norden is almost 19½ million, only a little greater than that of Canada. In this connection, the guide books and the excellent *Geography of Norden*, which were written and published especially for the Congress, will be well used references for many years to come.

Waiting for the opening ceremonies to begin in the main auditorium of the Folkets Hus, Stockholm.

Nature Conservation in Britain

Photographs by courtesy Central Office of Information, London, England.

Speech by Sir Saville Garner, K.C.M.G., High Commissioner for the United Kingdom, given at the Annual General Meeting of The Royal Canadian Geographical Society in the National Museum in Ottawa, 20 February 1961.

I REGARD it as a high privilege and honour to be invited to address The Royal Canadian Geographical Society.

The British High Commissioner appears in many disguises, but this is I think the first time that I have appeared in the rôle of a geographer.

Your President originally suggested that I might give some account of my travels and impressions throughout Canada. Though indeed I have done much travelling in every part, have felt the lure of the North and have been fascinated by the remarkable variety of everything in this vast land, from the outports in Newfoundland and the icebergs off the Atlantic Coast to the islands off British Columbia and the sunny waters of the Pacific, nevertheless I hardly dare to air my ignorance before an array of such a distinguished audience as tonight, so many of whom have infinitely more knowledge of things Canadian than I could ever hope to possess.

But it occurred to me that though we think of Canada as a vast land of limitless resources, nevertheless a realization is already growing up here that, if these resources are to be preserved for the enjoyment of Canadians, some steps towards "conservation" will be necessary. I understand indeed that there is to be a national conference next October on "Resources for Tomorrow" with attendance by all those interested in the preservation and management of "renewable resources". This has already aroused much interest, partic-

Above:—One of the famous small fishing villages of Devon is Clovelly on the north coast. Old cottages are clustered on the sides of a rift in some steep cliffs.

ularly among those who feel that more attention will need to be paid in the future to the importance of preserving natural areas for human recreation and refreshment.

It struck me therefore that it might be of interest to say something about my own country and how we in the British Isles have been tackling this problem in recent years. Certainly for us it is most important. We are heavily industrialised and have a pressing population with enormous concentration in urban centres — how are we to preserve the atmosphere of the country and all that it means for the jangled nerves of a sophisticated citizenry. To keep, as the poet has put it —

> . . . the sense
> Of majesty, and beauty, and repose,
> A blended holiness of earth and sky,
> Something that makes this individual spot, . . .
> . . .
> A whole without dependence or defect,
> Made for itself, and happy in itself,
> Perfect contentment, unity entire . . .

Many hard things have been said about life in the British Isles — its cold, its fog, its slums, its chilling houses, its narrow antiquated roads. But some things are unique. We enjoy the Gulf Stream, which, as all Canadians know, ensures us a temperate climate and we are an island.

The result is a land of astonishing variety, of rapid changes of scene and of many natural beauties. It is of interest to the geographer I should imagine because of its versatility. A short tour round the hundred miles or so of the south coast brings out the contrasts very vividly — from the White Cliffs of Dover past the shingle and sand of Sussex to the grey limestone of Dorset; the blood-red rocks of the old red sandstone in Devon to the wild crags of the Cornish coast. All these combine to make a land unique in its diversity and charm.

The people in the British Isles have been brought up in a tradition of enjoying nature. We are an outdoor people; all of us love the sea which has played so great a part in our tradition. Outdoor games, picnics, hiking, camping, bathing, boating and — incredible as it may seem on this continent — even walking are still all popular pursuits.

In every century there have been men who have loved nature and sung its praises. One thinks not only of the poets in every age but of ordinary citizens like Isaac Walton, whose reputation is world-wide and not only among fishermen, or of a modest country parson like Gilbert White whose village of Selborne in Hampshire will be described in the film you are going to see tonight.

As typical of the interest which even our public men take may I quote a letter written to the solid *Times* in the days of crisis just before the war:

> Sir,
>
> It may be of interest to record that whilst walking through St. James's Park today, I noticed a Grey Wagtail running about . . .
>
> Probably the occurrence of this bird in the heart of London has been recorded before, but I have not myself previously noted it in the Park.
>
> I am your obedient servant,
>
> NEVILLE CHAMBERLAIN.
>
> P.S. For the purpose of removing doubt, as we say in the House of Commons, I should perhaps add that I mean a Grey Wagtail and not a Pied.

Malcolm MacDonald records that he intended to send a reply as follows (though in fact it was not published):

> Sir,
>
> It may be of interest to record that, whilst running about in St. James's Park yesterday, I noticed a Chancellor of the Exchequer . . .
>
> Probably the occurence of this animal in the heart of London has been recorded before, but I have not myself previously noted it in the Park.
>
> I am your obedient servant,
>
> GREY WAGTAIL.
>
> P.S. For the purpose of removing doubt, as they say in the House of Commons, I should perhaps add that I mean a Chancellor of the Exchequer and not a Chancellor of the Duchy of Lancaster.

Indeed it can fairly be claimed:—

(1) In no country is appreciation of nature more widespread.

(2) Nowhere is the threat to scenic amenities and preservation of wild life greater.

But

(3) In no country are the citizens more ready and organized to jump to the defence as soon as any threat is seen. A recent letter to the *Daily Mirror* shows the popular attitude: "I would like to see a budgerigar in every prison cell. The company of these little birds would help many of our criminals towards a new and more gentle way of life."

The Englishman's home has proverbially always been his castle and from the earliest days the inhabitants of the British Isles have lived on and enjoyed the land. Though their

motives may have been hunting or sporting, the tradition goes back over the centuries giving a taste for the open air and making them familiar with natural beauty. One thinks back to the earliest days when the Normans preserved and hunted in the great forests and it is to them that we owe the New Forest today. In England of course "New" means only a thousand years old.

The pilgrims' ways across the face of Britain leading the people to religious shrines and above all to the tomb of St. Thomas the Martyr in Canterbury still remain as evidence.

The Tudors and the Stuarts settling down in their country houses after the turbulence of the baronial wars turned to the delights of gardening.

Above all the great aristocracy of the 18th century had its roots deep in the countryside. One of them said "A man can jog along on £40,000 a year" and jog very well they did. Their position was founded on landed property and they had their roots deep in the earth.

Among his other achievements, George the Third had a mother, Princess Augusta. She started a botanical garden of about nine acres in her private domain of Kew House and this was the origin of the most famous botanical gardens in the world.

The 18th century was a great period of revival of interest in nature, development of parks and gardens, a life of hunting when the bluff country squire leaning back in his hunting coat came into his own. Riding to hounds and savouring the full taste of country life.

But this way of life was coming to an end with the dawn of the industrial revolution. Dark satanic mills spread over the face of the land. The accent was on mechanical growth and the material things of life and one saw the spread of industrialization and urbanization. London, in the words of Cobbett, became the Great Wem and the ribbon development and bungaloid growth with which we are all too familiar today began.

I often think that the Victorians for all their vaunted virtue and their great prosperity have much to answer for.

A lot of harm was done, but fortunately in this century much has also been done to repair the damage and to restore a balance between town and country, between nature and industry.

Many private organizations made their influence felt, but eventually and effectively the Government stepped in. From 1910 onwards the idea of a planned use of land was given expression in successive Acts of Parliament, though in the early years the legislation was inadequate. Just before the last war three expert committees were appointed to report on —

(1) the unregulated growth and spread of industry;

Moreton Old Hall in Cheshire is one of the few moated country houses still extant and dates from the Tudor period. It is now in the possession of the National Trust.

Two hikers descend into Troutbeck, Westmorland, one of the many beautifully located villages in the Lake District, a National Park which extends into the three counties of Westmorland, Cumberland, and Lancashire.

(2) the difficulties in proper planning by the complications of compensation; and
(3) the encroachment of urban development upon the countryside.

After the war the Town and Country Planning Act of 1947 was passed. This is a comprehensive and radical measure providing a framework or pattern of land use for the whole of Great Britain.

Two years later in 1949 the National Parks and Access to the Countryside Act was passed. This provided for the designation of a number of extensive areas of beautiful country in England and Wales as National Parks. It was laid down that the characteristic landscape of these areas was to be carefully preserved and the facilities for open air recreation were to be improved or provided.

A National Parks Commission was set up; it may be of interest to record that the first Chairman was Sir Patrick Duff, formerly Deputy High Commissioner in Canada. Ten National Parks have been set up including:

The Peak District
The Lake District
Snowdonia
Dartmoor
The Pembrokeshire Coast
The North York Moors
The Yorkshire Dales
Exmoor
Northumberland (comprising most of the upland country from the Cheviots in the North to the Roman Wall in the South)
Brecon Beacons in South Wales

These parks cover a total area of 5,254 square miles, almost one-eleventh of the area of England and Wales.

One of the important problems that the National Parks Commission has had to wrestle with has been the programme for using nuclear power. Government policy is that nuclear power stations should be sited away from densely populated areas. The need for unlimited supplies of water demands sites beside river estuaries or by the sea and there is a danger that this "new industrial revolution" may encroach on areas designated as National Parks or recognised as of high landscape quality.

Another of their problems has been the disfigurement of the countryside by the erection of electricity pylons and aerial masts. The Parks Commission were also consulted about the setting up of the Ballistic Missile Early Warning Station in Yorkshire. Curiously enough one of their major worries is the alteration to the landscape not only by cutting down woodlands, but also by private afforestation schemes.

Another interesting thing that the National Parks Commission has done is to develop long distance routes. These are continuous paths with right of way along which the public may journey on foot or horseback without having to use roads with vehicles.

By last year six routes, covering 929 miles, had been approved; progress had been made

Beddgelert ("The grave of Gelert"), a village situated in Caernarvonshire, is not far from Snowdon (3,560 feet), the highest peak in Wales. The area is part of a National Park.

by means of surveys, cairn building and footpath agreements.

National Forest Parks

The Forestry Commission has formed, and opened to the public, seven National Forest Parks in Great Britain:

Argyll
Glen Trool
Glen More
Loch Ard (renamed the Queen Elizabeth Forest Park to commemorate the Coronation)

All in Scotland.

The Forest of Dean in England
Snowdonia in Wales
The Border Forest Park (which includes forests on the borders of Northumberland and Cumberland in England and of Roxburgh in Scotland)

The total area of the seven parks is rather less than half a million acres, including planted areas and unplantable moorland and mountains. Camping facilities are provided in most of the parks.

One of the things that the National Parks Commission does is to issue humorous posters. One of them shows a sick cow and a sick sheep tucked up in bed being nursed in hospital with the caption underneath —

When cows or sheep or fowls are chased
Their working parts may be displaced
So big or small or young or old
Your dog must really be controlled.

Quite separate from the work of the Parks Commission but important because they play so large a part in forming the character of the capital city are the Royal Parks in London. These parks have been and still remain the property of the reigning sovereign. During Cromwell's time much of the Crown land was sold off to speculators, but our Kings and Queens have always acted to preserve for the people the freedom of the parks and they have now been enjoyed for centuries. The story is told that the wife of George the Second, having designs on making St. James's Park private, asked the Prime Minister of the day, Sir Robert Walpole, what it could cost to do

so. He drily replied "Only a Crown, Madam". This effectively put a stop to her plans.

Another major activity of the Government was the establishment of the Nature Conservancy in 1949. Its functions are to provide scientific advice on the conservation and control of the natural flora and fauna of Great Britain, to establish, maintain and manage nature reserves including the maintenance of physical features of scientific interest and to organize and develop the research and scientific services.

The difference between a National Park and a Nature Reserve is that a park is primarily for the preservation of scenery and for the enjoyment of people, whereas a Nature Reserve is for the protection of a habitat and sometimes for the protection of a particular species whose continued existence is threatened. Eighty-two Nature Reserves had been declared in Great Britain by last year. The combined area was 138,437 acres, the biggest being the Cairngorms, the largest reserve in Britain and one of the largest in Europe.

But we are not a totalitarian state and the Government does not do everything. Indeed, as in so many other spheres, the most valuable work is often done by purely private bodies relying entirely on voluntary contributions. There are so many societies in the field that I cannot mention them all, but I will refer to two —

(1) The National Trust has been in existence for over 60 years. It started in a very small way from the struggle to save Wimbledon Common near London. It now owns vast open spaces in the Lake District, on the coasts of Wales and Cornwall, and among the commons and woodlands of Surrey and Hampshire. Rising taxation and death duties threaten the future of English country houses and estates. These country houses are the peculiar glory of England and it has often been said that they represent the most remarkable contribution to civilisation that England has produced. Under an Act of Parliament the Trust is enabled to hold country houses and now preserves many of them. One of these is the 16th century Quebec House at Westerham where General Wolfe spent his early life.

(2) The Council for the Preservation of Rural England. This was established some 35 years ago to organize concerted action to protect rural scenery and the amenities of country towns or villages from disfigurement or injury. It acts as a clearing house with the 200 affiliated other private organizations with which it works.

Conclusion

I conclude as I began — how can we bring peace and contentment to our mechanical civilisation with all its strains and tensions, its competitiveness, its materialism ? We all know in our private lives here in Ottawa the answer, where we are so blessed by nature —

About 6,000 pairs of gannets nest on Grassholm, an island off the coast of Pembrokeshire purchased by the Royal Society for the Protection of Birds.

the Gatineau Hills in winter for ski-ing, the lakes to which we repair in summer, the riverside cottages, the life of freedom of the open air in a rarer atmosphere where man can breathe again, where he comes into contact with nature and where his spirit can revive.

The problem is more acute in my own country. Nevertheless I hope I have been able to show that we are at least doing something about it. Indeed beyond the narrow field that I have surveyed there is much else beside in Britain that is germane to the general theme —

The ancient Norman castles scattered through the land and preserved, if in ruins, by an indulgent Ministry of Works.

The glorious variety of cathedrals, Norman, Gothic or Renaissance, combining in their sublime towers and spires and arches some of the finest architecture of all ages and at the same time a most inspiring symbol of man's devotion to God.

The stately country mansions with their priceless treasures now open to the public at half a crown a head by silver spoon born Dukes.

And surrounding all, the sea — with its waves, sands, cliffs and caves — the treasure of our people from time immemorial except for those few years when the beaches were mined to foil the Nazi invader.

Buttermere is one of the largest and best known lakes in the Lake District.

And there is much else that I have not been able to go into in detail — the establishment of Green Belts, the development of New Towns, the relocation of industry, the improvement of communications, particularly roads.

Moreover in recent years there has been another important underlying factor. Agriculture, from being neglected, has become a prosperous industry and the countryside is thriving with farms knowing a new richness and a new activity. Three causes are perhaps responsible for this:

(i) the war;

(ii) mechanisation, for our agriculture is the most heavily mechanised in the world;

(iii) subsidisation at the cost of general taxpayers like myself.

But whatever the reason, the result has been to redress the balance and to restore the countryside to its proper place in the national life.

All these things give a depth to life, a background and impose a sense of calm and beauty. I am sure that a generation is now growing up alive to the needs of the spirit and with new understanding and love for the beauties of nature. Certainly we are determined to preserve our heritage, not only for the people in our own islands, but for visitors from the Commonwealth and other countries overseas, and we are determined to pass on that heritage to future generations unimpaired.

Wordsworth, at times one of the feeblest of our poets but at times also one of our most sublime, when revealing what nature meant to him, expresses my thought in his Lines composed above Tintern Abbey —

> . . . For I have learned
> To look on nature, not as in the hour
> Of thoughtless youth; but hearing oftentimes
> The still, sad music of humanity, . . .
> . . .
> . . . And I have felt
> A presence that disturbs me with the joy
> Of elevated thoughts; a sense sublime
> Of something far more deeply interfused,
> Whose dwelling is the light of setting suns,
> And the round ocean and the living air,
> And the blue sky, and in the mind of man:
> A motion and a spirit, that impels
> All thinking things, all objects of all thought,
> And rolls through all things.

Directors and guests at the thirty-second annual general meeting of the Royal Canadian Geographical Society, 20 February 1961. Front row (l. to r.): Mr. R. G. Robertson, Dr. George Hooper, Vice-Admiral H. S. Rayner, Gen. A. G. L. McNaughton, Sir Saville Garner, Maj.-Gen. H. A. Young, Commodore O. C. S. Robertson, Maj.-Gen. W. J. Megill. Back row (l. to r.): Dr. H. J. Rowley, Mr. K. A. Greene, Mr. E. S. Martindale, Vice-Admiral H. T. W. Grant, Mr. F. R. Crawley, Dr. B. R. MacKay, Col. A. F. Duguid, Dr. C. M. Barbeau, Dr. N. L. Nicholson. D.P.W.

THE ROYAL CANADIAN GEOGRAPHICAL SOCIETY

ANNUAL GENERAL MEETING

The Society held its thirty-second annual general meeting on Monday, 20 February, in the Lecture Hall of the National Museum of Canada, at Ottawa. The President, Major-General H. A. Young, presided over the meeting.

After the minutes of the previous annual general meeting held on 15 February 1960, and the minutes of the special general meeting held on 20 October 1960 were approved, the President gave his report on activities of the Society during 1960:

"Your Excellency, Honoured Guests, Members of The Royal Canadian Geographical Society and Friends:

"I wish to welcome you to our annual meeting tonight and to give you a brief review of the activities of the Society.

"I would also like to welcome most heartily, on your behalf, to our meeting this evening our guest speaker, His Excellency Sir Saville Garner, the High Commissioner to Canada for the United Kingdom. You will be hearing from him later.

"You may recall that last year at this same meeting His Excellency the Governor General presented to Wing Commander Greenaway of the Royal Canadian Air Force the Massey Medal of the Society. His Excellency was not able to be present with us this evening to perform the same office but graciously consented to receive the Board of Directors at Government House at noon today when he presented the Massey Medal for this year to Commodore Owen Connor Struan Robertson, G.M., R.D., C.D., of the Royal Canadian Navy for his outstanding contribution to Canadian geographical knowledge while in command of H.M.C.S. *Labrador* from the time of its commissioning through the early hydrographic and survey work that was done with it, and as Commodore of the supply convoy for the installation of the Distant Early Warning line in the Arctic islands. Commodore Robertson is with us this evening: we are proud to have him as a guest at our annual meeting.

"You will recall that last year I had the regrettable task of record-

ing the death of one of the original Directors, Dr. Arthur Beauchesne, who was for many years our representative on the Board of Directors for the Province of Quebec. In accordance with our constitution, the Board of Directors have chosen Brigadier J. H. Réal Gagnon, C.B.E., C.D., of Quebec City to complete the unexpired term of this directorship. Brigadier Gagnon is President of Eastern Canada Steel & Iron Works Limited and an enthusiast about Canadian affairs and development. I know that he will make a notable contribution to the Society.

"I must record with regret also the resignation from the Board of His Honour Judge A. E. Arsenault of Charlottetown, who has been our representative from Prince Edward Island. The Board has appointed in his stead Major the Honourable F. Walter Hyndman, who is Lieutenant Governor of Prince Edward Island, an enthusiast about his province and about Canadian development. He too I am sure will make a notable contribution to the Board.

"During the past year our principal preoccupation has continued to be to maintain the high standard of the *Canadian Geographical Journal*, and to commence a series of changes which we hope will result in it becoming an even more effective medium in the future. You will recall that last year I mentioned receipt of a grant from the Canada Council which covers a period of three years, the amount being $15,000 for the first year, $10,000 for the second year — that is, the current one — and $5,000 for the third year. This grant has been spent in two ways, a third of it to make a start at providing some additional colour in the Journal, and in increasing somewhat the remuneration paid to our contributors. The remaining two-thirds has been spent on a membership promotion campaign.

"You will already have observed that we have been able during the year to have a cover in full colour on every issue and a frontispiece in colour in almost every issue. This is a start: we hope we will be able to go beyond it before too long. This has not all been possible directly as a result of the Canada Council grant. We are as well indebted to a number of firms and organizations who have kindly donated the use of colour plates to us. We have tried to acknowledge this courtesy in the appropriate issues of the Journal.

"Our membership campaign has not been as productive as we would have liked, but we have succeeded in making a twenty per cent increase over last year, which we feel is an excellent start. Our membership now stands at approximately 12,000, which is merely a position from which we hope to grow. I would say again as I said last year that anything that the members and friends of the Society can do to increase support for the Society will be very beneficial, and I can promise you that any increased revenue that may be obtained thereby for the Society will be used directly for the improvement of the Journal and the furtherance of the general aims of our organization.

"I would also like to mention particularly the help that has been given to our Executive Secretary and Editor by a number of firms in the publishing business. In searching for new methods of conducting our business and getting new ideas to bring to the publication of the Journal, he has gone to seek advice of top officials in the publishing business. Everywhere he has had not only a cordial welcome but has found individuals most helpful in giving advice and willing to spend time to consider best how our problems should be tackled. To receive this help from busy men is a most heartening thing, and shows that Canadian publishers in the magazine field recognize the work that we are trying to do and feel that we are making a contribution to Canadian literature.

"I should mention also that during the year two contributors to the Journal received awards of merit for their stories. Mrs. M. D. Fidler, who writes under the name of Vera Fidler, received an honourable mention in the Annual Members Memorial Award contest of the Canadian Women's Press Club for her article "The Odd Will of Peter Fidler" which was published in October 1959. Mr. Leslie Edwards won first prize in the class for non-technical magazines and weekly supplements in the contest sponsored by the Air Industries and Transport Association of Canada, jointly with the Canadian branch of the Aviation Writers' Association, for his article "The Story of Helicopters in Canada" which was published in March 1960. A plaque similar to the one presented to Mr. Edwards has also been presented to the Society.

"In October the Ryerson Press published a book of pictures entitled *Mirror Of Canada* which was compiled for the Society by Miss Sylvia Seeley from pictures that have appeared in the Journal during the past seven years. While no statement has yet been received from the publisher, it is understood the book has had a favourable reception from the public.

"In December last the Society was represented at a hearing before the Royal Commission on Publications by myself, our Honorary Counsel Mr. Gordon Maclaren, and the Executive Secretary. We will await with interest the recommendations of this commission.

"Financially, we have continued to have a struggle to make ends meet, and very nearly succeeded in doing it. I think we might have made it if a number of our members had not deferred sending in their membership fees until January of this year instead of in December. We had a loss on the year of $2,800. However, we feel that this has been a year of consolidation when we have improved our administration and have tried to establish a firm base from which further progress will be possible. I am confident that I will be able to record some sound progress when we meet again next year."

The report of the Honorary Treasurer was presented by Vice-Admiral H. T. W. Grant for Mr. D. M. Coolican, who was unable to be present.

The report of the Nominating Committee was presented by General A. G. L. McNaughton, Vice-President. The following Directors were re-elected for a three-year term: Major-General H. A. Young, Dr. Marc Boyer, Mr. R. H. Chesshire, Mr. R. E. Powell, Mr. R. Gordon Robertson, Dr. H. J. Rowley, Major-General G. R. Turner, Dr. J. T. Wilson. Dr. H. L. Keenleyside and Brigadier H. W. Love were also elected to serve on the Board of Directors for a three-year term.

The By-Law XXIV amending By-Laws XIII and XV of the Society's Constitution was approved. The new by-law provides for two permanent committees, Finance and Editorial, while the Directors can appoint other committees as need arises. Also, the duties of the Audit Committee were given to the Board as a whole by the amendment to By-Law XIII.

The President then introduced the guest speaker, Sir Saville Garner, United Kingdom High Commissioner to Canada. The text of Sir Saville Garner's speech appears elsewhere in this issue. The talk was followed by a very interesting motion picture in colour "Journey Into Spring" which was filmed at Selborne in Hampshire. Mr. K. A. Greene thanked the speaker, and Dr. B. R. MacKay thanked the press on behalf of the Society.

"Voyageurs Highway" is the title of an article by Eric W. Morse that will appear in the May issue. It is the first of a series of three articles that will deal with the routes of the voyageurs, how they overcame the natural obstacles on the waterways, and the influence of the fur trade on Canadian development.

This picture, from the engraving "Lake Superior" by Charles Mottram, is based on the painting by E. Hopkins that will appear at the start of the article in full colour. In it the artist has captured the hush and the expectancy of the start of the day's journey as dawn is breaking and the mists hang low over the water. For the voyageur, calm water and the promise of a fine day provided a pleasant interlude in a life of unremitting toil over the highway to the West.

Information and Enquiries About Membership

The support of our members in telling their friends about the Society has been a major factor in its growth during the past year. Many people do not know that membership in the Society is open to all who are interested in Canada and how Canadians live. Members are invited to nominate for membership anyone who they feel would be interested.

Please copy, or fill out, the form below and send it to us. We will act accordingly.

To:— The Executive Secretary
The Royal Canadian Geographical Society
54 Park Avenue, Ottawa 4, Ontario

Check here

For Members
I nominate for membership in the Society the person named below. Please send him/her information about the Society and about the *Canadian Geographical Journal.* ☐

For Non-Members
I want to become a member of the Society, and to receive the *Canadian Geographical Journal* monthly. I enclose annual dues of five dollars ($5.00). ☐

I desire further information about the Society and about the *Canadian Geographical Journal.* ☐

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.....
street

.....
city, zone, province

Candidate's Name.....

.....
street

.....
city, zone, province

European and sterling area members receive the *Canadian Geographical Journal* by post every month. Annual membership fees of $5.00 are payable in sterling, 36/–, to the European Representative of The Royal Canadian Geographical Society:

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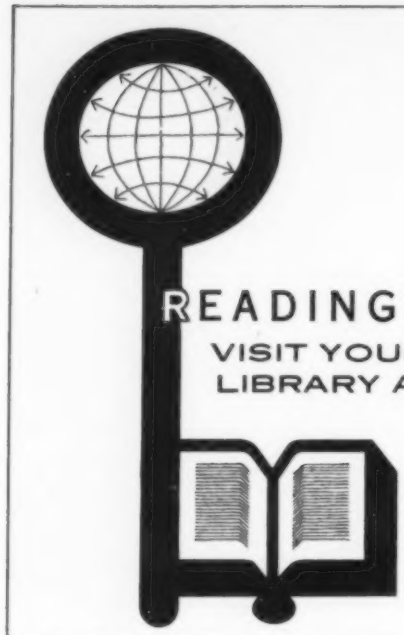

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EDITOR'S NOTE-BOOK

Leslie Laking (*Botanical Gardens in Canada*) is the Director of the Royal Botanical Gardens at Hamilton, Ontario. He obtained his B.S.A. degree in horticulture from the Ontario Agricultural College in 1939 and then spent two years at the Royal Botanic Garden at Kew, near London, England, obtaining the Kew Certificate.

Further post graduate studies in plant ecology at the University of Toronto were interrupted after two years when Mr. Laking joined the Meteorological Service of Canada attached to the R.C.A.F. In 1945 he joined the staff of the newly-formed Conservation Branch, Ontario Department of Planning and Development, directing the soil and land use studies on the Humber and Thames Valleys.

In July 1946 he was appointed Assistant Director and Horticulturist on the staff of the Royal Botanical Gardens, Hamilton, and in 1954 was appointed Director. Since 1947 he has been on the staff of the Department of Biology, McMaster University. Mr. Laking has done considerable work in expanding the services of the Royal Botanical Gardens.

* * *

Malak (*Spring Log Drive*) is a very well-known professional photographer who lives in Ottawa. His photographs of industrial life as well as those of more aesthetic interest are known and appreciated across the country.

* * *

Mr. and Mrs. Gordon Mallory (*The Peterborough Petroglyphs*) both graduated from Queen's University in 1958. Mr. Mallory is an instrumentation engineer with the Civilian Atomic Power Department of the Canadian General Electric Company. Mrs. Mallory was a social worker with the Children's Aid Society in Belleville, Ontario, for two years. She is at present on the staff of the reference department of the Peterborough Public Library.

* * *

Dr. N. L. Nicholson (*Nineteenth International Geographical Congress*) is the Director of the Geographical Branch of the Department of Mines

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and Technical Surveys in Ottawa. He was Head of the Canadian delegation and the official representative of the Royal Canadian Geographical Society at the Tenth General Assembly and the Nineteenth International Congress of the International Geographical Union held simultaneously at Stockholm in August 1960.

* * *

Sir Saville Garner, K.C.M.G., (*Nature Conservation in Britain*) is the High Commissioner for the United Kingdom to Canada. After a distinguished academic career at Cambridge University he joined the Commonwealth Relations Office (then the Dominions Office) in 1930. In 1935 he was made Assistant Private Secretary to the Secretary of State for Dominion Affairs, and later was Principal Private Secretary to a number of Ministers, including Sir Anthony Eden and Mr. Clement Attlee during the Second World War. During this time he travelled widely throughout the Commonwealth, visiting Canada in 1941 and 1942.

Sir Saville Garner first came to the United Kingdom High Commissioner's Office in Ottawa in 1943 and stayed for five years under Mr. Malcolm MacDonald and Sir Alexander Clutterbuck. For the last two years he was Deputy High Commissioner.

After two tours of duty in the Commonwealth Relations Office in London and one in India, he returned to Canada in 1956 as High Commissioner for the United Kingdom.

AMONGST THE NEW BOOKS

Three Miles of Gold
by S. A. Pain
(The Ryerson Press, Toronto. 109 pp. $3.50)

There is a certain aura of romance about any gold mine or camp, but the smaller ones are particularly fascinating since the miners' essential qualities of toughness and dogged belief in the work remain obvious there. The smaller mining communities or those in remote places tend to be virile colourful establishments and the Canadian northern scene of seventy years ago was peppered with them. One is continually impressed with the amount of sheer hard work that the prospectors must have endured to win ore from ground that

(*Continued on page VIII*)

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DEMERARA OR JAMAICA

(*Continued from page VII*)

often played them false and was far removed from the normal lines of communication.

Mr. Pain tells the story of the Kirkland Lake gold field in northern Ontario — a mining community which grew, slowly at first, into one of the world's most successful and yet which seems to have retained throughout the atmosphere and personality of a close-knit pioneer bush settlement. Before the first world war mining operations had grown in eight years from a few almost random stakings to a settlement with a small mine in production and many other grubbings striking out into the bush.

Amongst the first of the mining men to work the area was Harry Oakes; a restless thrusting character, he worked with enormous energy and later became one of the most successful mining magnates Canada has seen. The first world war saw the recovery of high grade ore valued at $350 per ton at the Tough — Oakes Mines, but the lode soon gave out. It was typical of the field that good yields did not persist, yet the miners were almost always able to persevere, continuing to mine very profitable ore as the workings deepened. From 1918 to 1930 the years were difficult, but the camp continued to grow, becoming a recognisable town with stores, restaurants and, eventually, civic buildings of its own. In the decade 1930-1940 the Kirkland Lake mines hit rich ore and most of them reached peak production, which continued during the early days of the second world war since gold was in demand for the purchase of war material from the United States. With the entry of America into the war the output of gold was no longer a vital necessity.

Despite the depression and the recession at the end of the war, the mines continued to function and kept a higher level of employment than might have been expected. Kirkland Lake had grown beyond the stage of being dependent upon one staple.

Mr. Pain's little book is written in an informal, almost chatty style, which is sometimes rather uneven. He knows the people and places intimately, having lived there for over thirty years, but one would be grateful for still more details of the scene. Nevertheless Mr. Pain has presented a story which might otherwise never have been told. He has pieced together the recollections of the "old-timers", the local records and his own impressions and has produced quite a neat history of these "three miles of gold".

D. L. DINELEY

Mr. Dineley is Professor of Geology at the University of Ottawa.

* * *

Fire in the Valley
by Jack Hambleton

(Longmans, Green and Company, Toronto. 166 pp. $3.75)

The fire in the valley, so graphically described, was officially known to the Ontario Department of Lands and Forests as Fire No. 11, starting on May 5, 1956, and burning over 12,000 acres in a single afternoon.

Even those who actually fight a large forest fire seldom have any clear impression of the whole fire scene; what happens beyond the range of their vision they may never know. The average person has even less knowledge of the logistics and tactics of combating fires in the forest. His impressions must come piecemeal from frequently incomplete or inaccurate accounts in the daily press. Mr. Hambleton, although he gives the account of Fire No. 11 a romantic setting, makes it possible for the reader to visualize the fire in its entirety. It is seen as one of many being fought by provincial fire fighters during the same period.

The problems of organization and management of a forest protection service are extensive. Men and equipment must be shifted about the province to meet the ever changing threat of fire, and lines of communication and transportation must function smoothly. Many times in the course of the story the author illustrates how a small incident in one area may affect the action taken elsewhere. Throughout the book, the smoke, tension, frustration, physical exhaustion and the sense of isolation and danger which can develop among men on the fire line, are ever present. Few words are wasted on descriptions of the locale or the actual burning. Instead, attention is concentrated on the urgent action required to combat the fire. The reader is continually aware of movement and action which builds up to a climax; he experiences a natural feeling of exhaustion or "let down" when the fire is finally controlled and the mopping-up stage begins.

(*Continued on page X*)

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(*Continued from page VIII*)

Although the reader can follow the course of the fire on the map at the front of the book, a series of progressive maps through the text would have made it easier to visualize growth of the fire. Several excellent illustrations of forest fires and forest fire suppression are included but, unfortunately, these were of fires other than the one described in the book. This is perhaps understandable, as during the course of a large fire there is seldom time to take pictures of it and certainly one could not anticipate the publication of a book on a particular fire.

While most people will readily recognize the "Honourable Mr. Forke" in the book, many of the other names will have a similar familiar ring to those who are acquainted with personnel of the Department of Lands and Forests. It is perhaps unfortunate that the author saw fit to change these names slightly for narrative purposes. These hard-working and devoted men of the Department deserve personal recognition from their employers, the people of Ontario.

Unfortunately the reader may gain the impression that fire fighting is almost like a game — an opinion engendered by the author's need to simplify detail in a book of this type. Although Mr. Hambleton tries to overcome this by frequently reminding his readers of the drudgery and heartbreak of the shock troop's work on the fire line, he is caught up in the excitement of the action and like a general recounting a battle sometimes loses sight of the individual struggles.

Fire in the Valley makes good reading for those who are interested in the out-of-doors and is also worth study by those whose duty it is to protect the forests. D. G. FRASER

Mr. Fraser has had much experience working in the forests of Ontario.

* * *

Half-Hours with Geology
by Herbert McKay
(Oxford University Press, Toronto. 140 pp. $1.75)

This little volume is one of the New Playbooks of Science Series which, the dust-jacket tells us, includes to date five books on various aspects of elementary physics and one on chemistry, all by Herbert McKay. The series is for children, and the titles indicate a fairly lively approach. It may be guessed that Mr. McKay is a physicist by training or inclination. He enters the realm of geology perhaps less happily, though his style is clear and direct and well-suited for youngsters. The greater part of his latest book is concerned with what is usually termed physical geology. The chapters are short and easily digested little essays on various kinds of rocks, geological processes and land-forms. There are also three chapters on the geological record of life.

The chapters given to physical geology are the better ones though they contain a number of half-truths and words used in a slightly misleading way (for example "trickling" for "percolating"); the vocabulary is not, in fact, one that a geologist would use when writing for children. One or two sections seem to be very out-of-date. Rightly, Mr. McKay includes a word here and there upon the economic aspects of some of the rocks he discusses, but mentions none of the radical changes in our ways of recovering or exploiting these raw materials which have been developed over the last few decades.

Much of this leads to the impression that the author is acquainted with geology only from a distance, and this is confirmed by the chapters on the different geological ages. The source of Mr. McKay's information seems to have been a nineteenth century textbook on general geology, perhaps an early edition of Geikie. Apart from the short discourse on radiometric dating, there is no sign that the author has read any of the now numerous excellent American or British general geology texts. Furthermore, while *Half-Hours With Geology* is cheap by comparison with these larger, glossy and lavishly illustrated editions, it does suffer from the lack of illustrations. There are no photographs; the figures of fossils and landscapes are few and inadequate and the line diagrams are most unattractive. It would have been worth while perhaps to have cut the scope and length of the text in order to increase the quality and number of illustrations and yet keep the price of the book down. Introducing children to geology is surely made more enjoyable by using lively yet accurate illustrations. The text, though by no means without its minor faults, is not uninteresting and should have been made more vivid with a little more care given to the figures. D. L. DINELEY

Dr. Dineley is Professor of Geology at the University of Ottawa.

* * *

The Complete Book of Marvels
by Richard Halliburton
(The Bobbs-Merrill Company Inc. Indianapolis and New York; 640 pp. $6.50)

This big, lavishly illustrated reprint tells of a pre-war trip around the world, with stopovers at fifty-five

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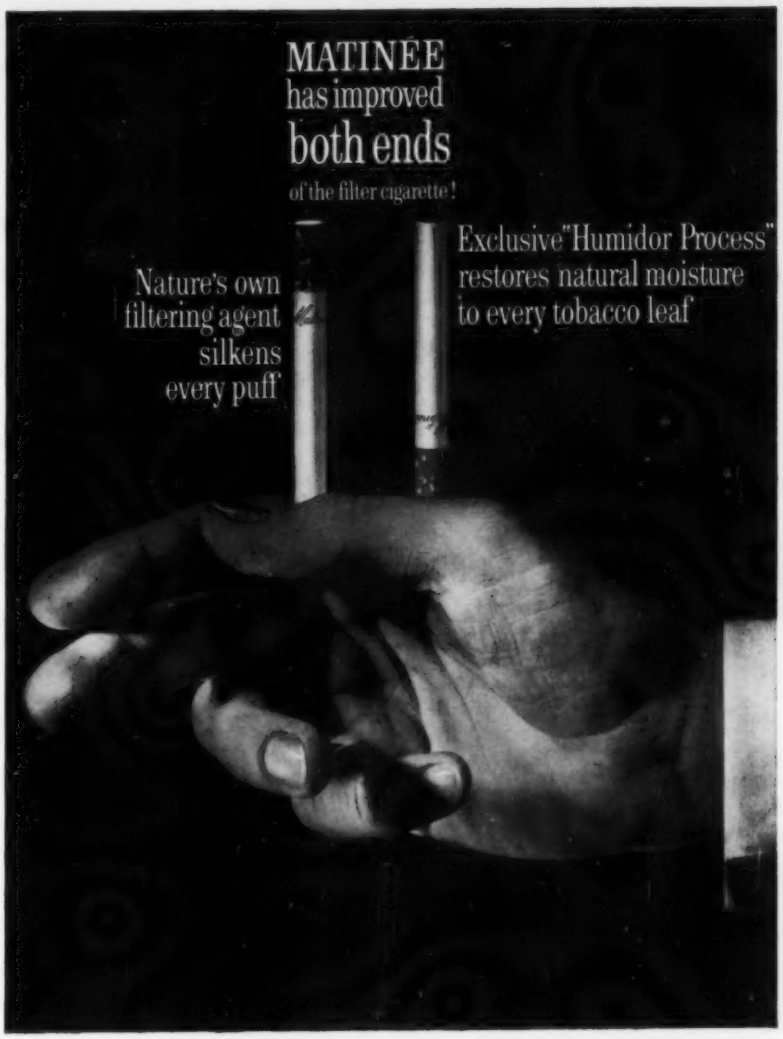
places of interest. At first inspection, and not least because of its style, dense with italics, prickly with exclamation marks, and awash with superlatives, the book can easily be deprecated. Even the title strikes a wrong note. But on closer inspection we find that the author is specifically addressing children, a fact that the publishers seems not to want to emphasize and that must of course condition all judgements. Perhaps the *come-with-me-kids-to-the-Taj-Mahal* approach has something to be said for it.

Richard Halliburton, indefatigable traveller and disemboguer of words, was no ordinary rubberneck. He was an adventurer. Not content, for instance, merely to look into the Sacred Well of Yum-Chac, the rain god of the ancient Yucatan Maya, where sacrificial brides were once flung, he dove down the 70-foot drop and managed to swim and scramble back to safety at the cost of no more than a slight headache. Very few people will tackle Fujiyama off-season, but Halliburton climbed it, alone, in midwinter. Whereas the standard tourist crosses Grand St. Bernard by car or bus, our author goes, à l'Hannibal, by elephant. To facilitate his sojourn in remote Timbuctoo, he buys a couple of child slaves, at five dollars a piece. All in good clean fun.

What strikes the adult reader of the *Marvels* today is the curious impression of a happy trouble-free world that Halliburton was exploring. His magic carpet encountered no frontier difficulties or international tensions. Was it by chance that he steered clear of central Europe ? Anyhow, the world of the late 1930's was his placid open oyster. All of which lends symbolism and poignancy to the new Appendix. It consists of excerpts from Halliburton's own account of his attempt to sail a Chinese junk across the Pacific Ocean as a stunt for the the San Francisco World's Fair of 1939. His description of the difficulties of getting the ship built (by a plump Hong Kong polygamist incredibly named Mr. Fat Kau) is most amusing. After many delays the author and six companions set off in the *Sea Dragon* early in March. In the midst of a bad storm on the twenty-fourth of that month, he sent out a cheerful radio message. And the rest, as the closing sentence of the book tersely informs us, is silence.

N. T. GRIDGEMAN

Mr. Gridgeman is a statistician working in the Applied Biology division of the National Research Council, Ottawa.



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Grasses

by Irmengarde Eberle

(H. Z. Walck, Incorporated, New York. 56 pp. $2.75)

In the sixth verse of the fortieth chapter of the prophet Isaiah we are told that "all flesh is grass." In this book called *Grasses* we find a well illustrated picture of what grasses mean to this world of ours. From the Arctic to the Antarctic grasses clothe the earth. Bamboo for shelter in India, timothy for cattle in Canada, corn for hogs in the United States and wheat for bread in a hungry world, illustrates how widespread and useful the grass family really is.

Although Irmengarde Eberle has written at the public school level the story is told in language that scholars would enjoy. The information is factually true and the topic so thoroughly covered that it cannot be read without a longing to see some of these grasses in their natural environment. *Grasses* — should find its way into every public library and would be a worthwhile addition to the natural science section of elementary school libraries. Parents who wish to stimulate and widen the experience of their children would do well to have a copy on the fireplace shelf. The drawings by Ezra Jack Keats are a valuable addition to this book and invite the reader to linger over the pages.

J. E. R. GREENSHIELDS

Dr. Greenshields is Associate Director of Crops (Forage) in the Department of Agriculture at Ottawa.

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Indian Legends of Canada. **By Ella Elizabeth Clark. (McClelland and Stewart, Limited, Toronto). A collection of legends and myths that have served to pass the long winter evenings among the Indian tribes for generations.**

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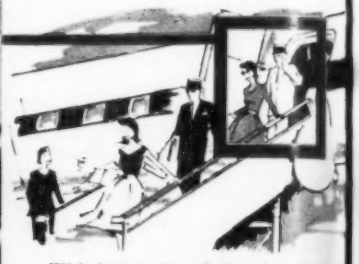

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